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Tests were conducted to find the differences between the child who feels that his achievement is a result of internal factors and the child who feels that his achievement or lack of it is a result of external factors. Interviews, tests, and observations provided data for the suggested relationships.

Children who feel achievement to be a result of internal factors are more able and more accomplished in academic skills than those who feel achievement to be a result of external factors. Whether the achievement caused the attitude cannot be ascertained, but a reciprocal relationship could be suggested. The relationship of the variables to maternal attitude suggests that a strong preference for achievement rewards grows out of a relationship with a warm, accepting mother, who expects and rewards competence. High correlation exists between the flexibility of a mother's expectation and the internal character of the child. If the mother is more concerned with her own needs than those of the child, her responses will be to some degree inappropriate, and the connections between his behavior and results will be weakened for the child.

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INTERNAL CONTROL OF REINFORCEMENTS AND THE SCHOOL LEARNING PROCESS

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In several contexts the social learning theory concept of perceived locus of control of reinforcing outcomes has proved effective in predicting behavior. First used as a way of characterizing differences among experimental situations (5, 7), it has also proved useful to characterize relatively pervasive differences between individuals. Propensities of individuals to perceive locus of control of reinforcement as either internal to one's self or external can be reliably measured and related meaningfully to differences among individuals in various patterns of behavior (4, 8). This attitude about the relation of one's behavior to reinforcement may be treated within social learning theory as a set of generalized expectancies, moving with the individual across situations which resemble each other in their reward outcomes for him.

The general expectation that one's instrumental behaviors are causally related to obtaining desired reinforcements, or the contrasting expectation that reinforcements occur because of factors outside one's control, has a significant impact on what is learned in any situation where activity is followed by events reinforcing to the individual's need. Where the perception of internal (or self) control is high, outcomes should modify future occurrence of behavior in a fashion congruent with the reinforcing outcomes. Where the contrasting attitude of external control prevails, reinforcing outcomes may fail to alter future behavior in the manner expected. For instance, the child receiving a good grade on a test, may regard the good grade as a function of his own ability and efforts, or he may regard the grade as largely a function of an especially easy test, a favor of the teacher, luck, etc. The influence of the grade on his future behavior (amount of study for future tests, aspiration level, etc.) will differ with the degree of internality or externality of his attitude.

In the basic formulation of SLT, behavior is regarded as a function of the person's preference for certain reinforcements, among those available in the situation, in combination with his expectancy that behaving thus will lead to the preferred reinforcement in that situation. The expectancy concept, then, does not correspond to the objective probability of occurrence of reinforcing event x, but rather is the perceived probability that my behavior y will lead to desired outcome z. Utilizing this definition of expectancy, an individual with a strong belief that reinforcing events occur, or not, independent of his

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own behavior, could be said to have a low generalized expectancy of success for the given class of situation. Should this individual simultaneously place a high value on the class of reinforcer over which he believes he has so little control, he would in social learning terms be said to be in conflict or maladjusted with regard to this area of his life.

The following part of my paper will be presented in two sections. First, a brief description of the method of larger study from which the data to be discussed are drawn will be presented. Second, I will present some correlational findings, describing relationships between a measure of children's belief in internal control of reinforcement and other variables of the study. In the light of these findings, I shall try to suggest a few hypotheses which might be tested under more controlled conditions to yield more definitive answers.

Method: Responses to the Crandall Children's Achievement Responsibility Questionnaire (IAR) were obtained from 55 girls and 59 boys who were part of a large study of the effects of mother-child relations on achievement motivation and school performance. The questionnaire consisted of 34 pairs of statements like:

"Suppose you don't do as well as usual in a subject at school.
Would this probably happen
a) because you weren't as careful as usual, or
b) because someone bothered you and kept you from working?"

The child is asked to choose one or the other alternative. Questionnaires were individually administered to Ss in grades 3, 4, and 5; they were administered to Ss in groups in grades 6 and 7. A child's score is the number of internal alternatives chosen. All children were attending the University of Missouri Laboratory School and in order for their data to be included in this aspect of the study, they needed to have been in continuous attendance there from at least 3rd grade on. (In fact, more than 3/4's of the present Ss have attended this school since 1st grade.)

Other data available from the children included the following: the results of a Stanford-Binet (Form L-M) administered within 18 months of the other data collection; scores from the California Achievement Test taken at the end of their year in third grade; a score from the Children's Manifest Anxiety Scale; and a score for Need Achievement obtained from an incomplete stories technique. These latter two procedures were individually administered to all Ss. Since the achievement scores at the completion of third grade were actually taken from several different intact groups, raw scores were converted into standard scores within each group in order to facilitate comparison. Similarly raw scores from the CMAS and the need achievement measure, because they showed definite indications that scores and age at the time of testing were systematically related, were converted into standard scores within each grade group before being added to the analysis. In addition, the need measure had yielded a positively skewed distribution of scores which was transformed by means of common logs before the standard score translation.

The need measure was obtained by counting the number of achievement stories occurring for a particular child in response to six short instructions to: "Tell me a story about. . . ." All stories were scored by two judges working independently. Inter-judge agreement about occurrence of achievement themes averaged 94%.

Achievement was defined as striving to succeed in competition with some standard of excellence. Stories needed to involve at least one of the following: competition with a standard, unique accomplishment, or long term involvement. The stories did not need to picture successful goal attainment. This definition is essentially adapted from the definition given for achievement imagery in the McClelland, et al scoring manual for need achievement (6).

From each child's mother were obtained attitude and family data in a personal interview. The interview included the Parent Attitude Research Instrument and an adapted and extended form of the Winterbottom Independence Training Attitude Questionnaire. The latter asks the mother to state for a wide range of mastery, achievement, and self-help behaviors the age by which she would want her child (or children) to be able to do that thing. Twenty additional items were added by this investigator to the original 20. An item analysis revealed that 31 of the 40 items were predictive of total score, and responses to these 31 were used to obtain mother's score. This score is expressed as a mean age of independence demands and is called MAIT for short. We also found for each mother the standard deviation of her responses around her own mean and this has been labelled a "flexibility of independence training attitude" score. The PARI was initially scored for its 23 component subscales and then these scores were combined into three factor scores representing Maternal Control, Hostility-Rejection, and Democratic Attitudes.

With these scores obtained from the mother interviews, as with the child data, raw scores suggested that there were systematic differences correlated with the ages of the children. Said another way, mothers with older children seemed to differ in a variety of attitudes from mothers with younger children. While these findings are interesting in and of themselves, from the standpoint of the analysis intended here these relationships had to be regarded as a regrettable source of noise. Therefore, mother attitude raw scores were translated into standard scores in a manner analogous to that employed with the children's data. For example, a particular mother's scores are expressed as her position on the variable in question relative to the mean and variability of sixth graders' mothers.

Data were analyzed by computing Pearson Product Moment Correlation Coefficients among all variables, and partial correlation was used to explore some of the relationships further.

Results: First, let's briefly describe the sample of Ss. Their average IQ was high; 124 for boys and 126 for girls. No child in the present sample had a measured IQ of less than 100. Most children were several years more advanced in their standard achievement test scores than would be expected on the basis of their grade placement. Families could all be characterized as middle or upper-middle class in socioeconomic status. Roughly 60% of fathers were employed in some university-related capacity; the remainder of fathers were primarily owners and managers of local businesses, independent professionals, and prosperous farmers.

The school provides classes from kindergarten through senior high school. Each grade has one classroom and a class consists of between 25 and 30 children. There is relatively low turn-over in both children and teaching personnel, providing a very stable setting in which to do a study. Children's raw IAR scores tended to increase with age in the span between roughly 8 1/2 to 12 1/2; over-all average number of internal responses was 25.5 out of 34. There was a very small, but significant, tendency for boys to make more internal responses than girls.

The relationships of IAP scores and need achievement scores to real achievement and anxiety score are summarized in Table 1. Inspection of Table 1 reveals that the stronger the child's belief that he himself controls reinforcement outcomes in the area of intellectual achievement, the better he performs on both the general intelligence test and on the more specific school achievement tests. These results hold for both boys and girls and confirm previous similar findings of Crandall, Katkovsky, and Preston (2) and more recent findings of Crandall, Katkovsky, and Crandall (3), with the difference that we do not find evidence of sex differences in the obtained relationships. Although not shown in Table 1, correlations of IAR with achievement pattern scores (the child's performance in a particular subject relative to his own mean achievement) failed to show any significant differential relationships, implying that the attitude which the IAR scale measures is a generalized attitude toward school achievement.

Table 1 also suggests that need achievement is related to real school performance in a minimal way; however, the relation obtained is positive for boys and negative for girls. Further along in the same table, we find that IAR and need achievement are negatively related to each other for children of both sexes. In other words, stronger need achievement is associated with greater belief in external control of reinforcements. Returning to the SLT formulation that behavior is a function of both need value and expectancy, and recalling that conflict was defined as high need value and low expectancy of attainment, we can attempt to control statistically a possible sampling bias in our children. It happened in this sample that to a significant extent, stronger need for achievement was associated with greater attribution of external control of reinforcement. If the correlations between need achievement and real achievement are recomputed holding IAR constant, the value of the original positive correlations are increased for boys and the faintly negative correlations between need and performance for girls are reduced to zero. These findings suggest that to some extent the relation between the IAR measure and NACH might serve as a measure of conflict in the academic achievement area among boys.

Also in Table 1, we find that children of both sexes who are more inclined to perceive themselves in command of reinforcing outcomes, report fewer anxiety symptoms. As Battle & Rotter (1) noted in discussing the results of a previous study, these data suggest an hypothesis that some individual differences in IAR may represent differences in amount of defensiveness that the individual employs to guard himself against the discomforts of failure and disappointment. Taking an external attitude toward the outcome of a situation could reduce the sting of failure considerably, but the price for that comfort is a reduced effectiveness and an increased sense of helplessness and anxiety.

Table 2 presents correlations between IAR scores and need achievement scores on the one hand and aspects of mother attitudes and birth order data on the other. First, among girls there are no significant associations between mother attitude variables and either IAR or Need Achievement, except for one correlation suggesting that mothers inclined toward later independence training have girls who tell more achievement-related stories. Another trend suggests that the earlier born girl (and also the earlier born boy) tend to be more internal in their attitude toward reinforcement. This finding is very much like that of Crandall, Katkovsky, and Crandall (3).

The relationships among boys' IAR and need scores and mother attitudes in Table 2 are of more interest. Again, while correlations such as these cannot answer the question of what produces the observed individual differences in

perception of locus of control, they may suggest some hypotheses to be tested on another day. Apparently, among boys development of belief in one's control over reinforcing events is positively related to maternal attitudes toward the child which are relatively permissive and a related, but not completely identical, attitude, predisposing the mother toward expectation of early independence and mastery behaviors from her child. (When a partial correlation between IAR and either attitude is computed holding the effect of other attitude constant, the values of r are reduced only slightly.) Internality of attitude is also positively associated with mother's flexibility in her expectations. Need achievement is related to mother's favorability toward early independence training, but is unrelated either to her flexibility of expectation or to her tendency to be permissive or controlling. Need achievement is higher among boys whose mothers are more accepting of their maternal role.

It might be possible to find with various combinations of these maternal attitudes what are the crucial conditions of the mother-child relationship which predispose the child to develop a high need value for a certain kind of satisfaction but also predispose him to conflict because of his low expectation of being able by his own efforts to obtain satisfaction.

To summarize briefly, the observed relationships suggest the following possibilities. Highly internal children are more able and more accomplished in academic skills than those more external. One cannot say whether their ability and accomplishments produce their attitude or vice versa. One might cautiously suggest a reciprocal relationship. The relations of our variables to maternal attitudes suggest that a strong preference for achievement rewards grows out of a relationship with a warm, accepting mother, who expects and rewards competence. Whether the child builds a strong expectation of being able to attain achievement rewards by his own efforts seems to depend to some extent upon whether mother responds appropriately to the cues which her child emits regarding his growing competence. If she is overly concerned with problems of impulse control, if her dealings with the child are more centered in her needs than in his, or -- I am tempted to say -- if he is a she, mother's responses will be to some degree inappropriate and the connections between behavior and outcomes will be for the child weakened.

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TABLE 1

Correlations Among IAR Scores and

Children's Real and Need Achievement

	Boys (N = 59)		Girls (N = 55)	
	IAR	NACH	IAR	NACH
IQ	+.34***	+.26**	+.33**	-.13
Reading	+.50***	+.01	+.45***	-.22
Arithmetic	+.46***	+.27**	+.51***	-.27**
Spelling	+.56***	+.22*	+.38***	-.25*
CMAS	-.37***	+.07	-.28**	+.23*
NACH	-.28**	---	-.44***	---

TABLE 2

Correlations Among IAR, Need Achievement,

Maternal Attitudes, and Birth Order

	Boys (N = 59)		Girls (N = 55)	
	IAR	NACH	IAR	NACH
Maternal Control	-.48***	+.09	+.10	+.04
Hostility-rejection	-.06	-.30**	+.10	-.05
Democratic attitudes	+.06	+.06	-.03	+.01
MAIT	-.47***	-.43***	-.20	+.28**
Flexibility	+.47***	-.05	+.18	-.11
Birth order	-.23*	-.09	-.24*	-.01

* $p < .10$
** $p < .05$
*** $p < .01$